



**OPERATIONS COMMITTEE  
PLANNING AND PROGRAMMING COMMITTEE  
January 22, 1998**

Los Angeles County  
Metropolitan  
Transportation  
Authority

One Gateway Plaza  
Los Angeles, CA  
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**SUBJECT: STANDARD REGIONAL REVENUE PROCESSING  
SYSTEM FINAL PERFORMANCE SPECIFICATION  
AND IMPLEMENTATION PROCESS UPDATE**

**ACTION: RECEIVE AND FILE FINAL PERFORMANCE  
SPECIFICATION, UPDATE AND IMPLEMENTATION  
WORKPLAN OF STANDARD REGIONAL REVENUE  
PROCESSING SYSTEM**

**RECOMMENDATION**

- a.) Receive and file the Final Performance Specification for the Standard Regional Revenue Processing System (SRRPS), describing the approved technical and functional elements of an integrated, regional electronic fare collection system.
- b.) Receive and file a status summary of the Standard Regional Revenue Processing System.
- c.) Receive and file the draft workplan for the next steps for the implementation of the SRRPS.

**BACKGROUND**

In May 1997, the MTA Board approved a description of the Standard Regional Revenue Processing System (SRRPS). The goal of SRRPS is to build upon the success of the Metrocard magnetic-stripe card and implement a convenient, cost-efficient, secure and integrated electronic fare collection system for all MTA bus and rail services and other participating transit operators serving Los Angeles County. Attachment A describes the SRRPS and its objectives.

Also in May 1997, the Board authorized development of an SRRPS performance specification, designed to guide future procurements of electronic fare media collection equipment and any equipment related to cash fare collection, vehicle location monitoring, and on-bus passenger and operator communications. The specification describes the approved technical and functional requirements, system design elements, communication protocols, architectural requirements, and physical dimensions of the SRRPS.

The final specification represents several hundred hours of research and development and the involvement of many advanced technology companies, financial institutions, and transit properties and vendors. All fixed-route operators in L.A. County and over 40 companies world-wide received draft copies and were given opportunity to comment. Many of the latter replied with detailed comments, which are reflected in the final document. Current Metrocard operators reviewed and commented on the emerging specification at each stage of its development. Attachment B lists all the participants in the development process.

The current farebox equipment, which began service in 1987, can likely be kept in operation for a few more years. However, the lack of manufacturer support and parts, plus physical and technical obsolescence of the equipment, will eventually require its replacement. Experience shows that mechanical deterioration of fare collection equipment leads to revenue loss. Given the necessary lead time (typically 2+ years) and significant capital costs of such procurements, this implementation planning should begin in the very near future.

### NEXT STEPS

To pursue the next steps of the project will require some additional consultant analysis, supported by Board policy guidance. Consistent with Board action in May 1997, it is suggested that the questions below be addressed under the guidance of an SRRPS Board Task Force, in consultation with interested local operators. A workplan outlining the tasks to address these questions has been prepared and is included as Attachment C.

1. MTA needs to determine the internal objectives for its future cash and electronic fare collection processes and systems. What configuration strategies does MTA want to implement for SRRPS applications on its bus and rail fleets? Should current farebox equipment be retrofitted, or should MTA procure new fareboxes and ticket vending machines with integrated SRRPS components? While the SRRPS can "stand beside" existing or future cash fareboxes, it would, at a minimum, be desirable to coordinate these procurements.
2. What are the initial and on-going capital and operating costs of the options? Where can efficiencies be achieved? What role should privatization play in this effort?
3. How does MTA provide necessary funding to replace aging fareboxes, ticket vending machines and radio systems with new, SRRPS-compliant equipment?
4. Should financing drive procurement options? For example, banking institutions may be willing to provide financing for lease or procurement of the equipment in exchange for providing the clearinghouse function. Another option would be to create a turnkey revenue handling operation involving electronic and/or cash transaction handling services that include all necessary equipment, software, staff and interagency coordination.

5. What interagency procurement and institutional relationships make sense for SRRPS? Decentralized coordination of technology? A regional procurement and administrative organization (i.e., a joint powers authority, a non-profit corporation, a private corporation)? Decentralized equipment with a centralized clearinghouse function?
6. MTA needs to consider timing and coordination of the SRRPS with other "smart bus" systems being procured or planned. An objective of the SRRPS is to provide a single point of operator control for fare collection functions, eliminating multiple keypads that might confuse and distract the bus operator. While SRRPS has many unique features, there is a clear relationship to "smart bus", and there should be close coordination between these efforts.

### CONCLUSION

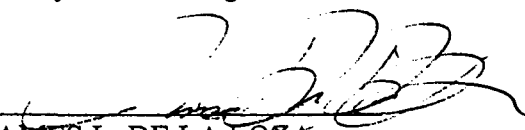
The development of the SRRPS Performance Specification has been completed with the involvement of the participating Metrocard operators and the transit, technology and banking industries. The next steps are to address several policy and technical implementation issues as outlined in this report and elaborated in the attached workplan.

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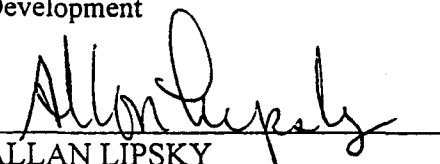
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Attachments

## Attachment A

Los Angeles County Metropolitan Transportation Authority

### STANDARD REGIONAL REVENUE PROCESSING SYSTEM

#### System Description

Since 1990, the MTA and several other agencies have been developing the Metrocard, a multi-agency magnetic-stripe electronic fare collection system which is currently in revenue service on approximately 400 buses. Metrocard has been developed under an MTA contract with GFI-Genfare Corporation. During this same period, outside of the Metrocard project, proximity card systems have been developed in Southern California and in transit operations throughout the world. "Smart" cards also are being introduced in the financial, telecommunications and security industries; these may lead to transit applications in the near future. Other automated systems such as passenger counting, vehicle locators, stop annunciators and advanced radio communications are being added to bus fleets and complicating the bus operator area with multiple controller keypads.

The MTA and agencies currently using Metrocard now desire to expand the functionality and improve the integration of the Metrocard with other transit system components by establishing a Standard Regional Revenue Processing System (SRRPS). The SRRPS is an overall system that:

- accepts and reconciles fare payments from multiple electronic fare media, including bus and rail modes;
- is not limited to transit but has potential to join with other public agencies, plus the banking industry, telecommunications and security systems;
- allows control of multiple bus components from a single operator keypad
- allows passengers to use the same electronic fare media in "seamless" journeys from one participating agency to another
- systematically distributes passenger revenues to participating transit agencies on the basis of agreed formulas and actual usage

Attachment B

Los Angeles County Metropolitan Transportation Authority

**STANDARD REGIONAL REVENUE PROCESSING SYSTEM**

Recipients and Development Participants of Draft SRRPS Specification

Technology Companies & Manufacturers

ACE Automation & Computer Eng. Ltd., Hong Kong  
AES Prodata, Mississauga, Ontario  
Agent Systems, Inc., Dallas TX  
ALMEX Ticketing Systems/Metric Grp. Inc., Clifton NJ  
Ascom Automation, Inc., Philadelphia PA  
AT&T Inc., Somerset NJ  
B. Szabo, Inc., Los Angeles CA  
Benton International, Torrance CA  
BZA, Sarasota, FL  
Card Technologies of Australia, East Sydney  
CardCom Technology, Buena Park CA  
CDSNet/Intec, Los Angeles CA  
Clever Devices Ltd., Long Beach CA  
Cubic ARCG, Oakland CA  
Dassault AT of America, New York NY  
De Leuw, Cather & Company, Philadelphia PA  
Digital Recorders Inc., Chicago IL  
Echelon Industries, Diamond Bar CA  
Electronic Payment Systems, Inc., Wilmington DE  
GEMPLUS Card International, Gaithersburg MD  
GFI Genfare, Elkwood Grove IL  
Giesecke & Devrient America, Inc., Reston VA  
IBI Group, Toronto Canada  
IBM Argentina S.A., Argentina  
Innovatron Industries, Paris France  
Intec Ltd., Seoul Korea  
LTK Engineering Services, Chicago IL  
Mikron Identification, Austria  
Mitsubishi International Corporation, Los Angeles CA  
ORGA Card Systems, Inc., Paoli PA  
Racom Systems, Inc., Englewood Colorado  
Scheidt & Bachmann USA, Burlington MS Siemens  
Components, Inc., Cupertino CA  
Smartcard Systems Business/Motorola, Schaumburg IL  
SYSECA Incorporated, Marina Del Rey CA  
VenTek International, Novato CA  
Wayfarer Transit Systems, Ltd., England

Banking

American Express Travel Related Services,  
New York NY  
Bank of America, San Francisco CA  
VISA U.S.A. Inc., San Francisco CA

L.A. County Transit Operators

Antelope Valley Transit Authority  
City of Arcadia  
City of Claremont  
Commerce Bus Lines  
Culver City Municipal Bus Lines  
Foothill Transit  
Gardena Municipal Bus Lines  
Long Beach Transit  
Montebello Bus Lines  
Norwalk Transit Systems  
City of Redondo Beach  
City of Santa Clarita  
Santa Monica Municipal Bus Lines  
So. Calif. Regional Rail Authority  
Torrance Transit

Other Transit Properties

Long Island Rail Road, Hollis NY  
New York City Transit Authority

## Attachment C

Los Angeles County Metropolitan Transportation Authority

# STANDARD REGIONAL REVENUE PROCESSING SYSTEM

## SRRPS Implementation Workplan

***Overall Workplan Objective:*** Determine the preferred steps and net benefit or cost to implement the Standard Regional Revenue Processing System on the LACMTA bus and rail systems and on other Los Angeles-area bus, rail and shuttle operator fleets.

This overall objective is split into two parts: Part “A” is to develop a strategy for maintaining, upgrading or replacing current fareboxes while implementing SRRPS as either an integrated or stand-alone electronic fare collection system. Part “B” represents work to determine steps and issues to be resolved in order to establish a clearinghouse function whose mission encompasses card management, revenue management (collection, reconciliation and settlement), data sharing and possibly related customer service and marketing activities for the current and future service providers accepting SRRPS electronic revenue payment.

### PART A. FAREBOX-SRRPS INTEGRATION

#### Task 1.0 – Review of existing fareboxes and rail ticket vending machines

Collect and validate information about Metrobus fareboxes and Metrorail and Metrolink ticket vending machines (including but not limited to age, transactions per farebox, fare table and ticket type limitations, mechanical performance, interval failure rates, types of errors, current year maintenance costs, projected annual maintenance and upkeep costs, etc.).

Review terms of current farebox procurement and identify any legal or programmatic obstacles to retiring them from service.

#### Task 2.0 – Defining the “case” for region-wide electronic fare media

Document current administrative and operating costs of cash and non-cash MTA fare media handling. Identify areas of cost efficiencies and inefficiencies of implementing SRRPS electronic fare payment. Include the potential for new revenues and other non-financial benefits (e.g., greater fare structure and management flexibility; improved revenue accounting and security; reduced media fraud and fare abuse; enhanced ridership data; ancillary revenue from advertising, card float and unused card value; faster boarding throughput; and lower maintenance costs).

Using survey data from the MTA's Service Planning Market Research Project, analyze and describe the potential impacts of electronic fare payment on various rider groups, including groupings by age, ethnicity, income, travel frequency, and current fare payment method.

Determine, as a corollary task, the feasibility of privatizing the electronic and/or cash collection process at MTA. Assess the steps necessary and cost/benefit trade-offs associated with outsourcing all necessary equipment, software and staff resources.

#### Task 3.0 – Review of SRRPS Components, Technology and Objectives

Survey current and pending Metrocard operators, processes, type and number of equipment, transaction rates, performance, interval error rates, reasons for errors, procedures for handling errors, and related subjects.

Identify the coding and/or encryption format of the current magnetic stripe card. Address how subsequent SRRPS components will be compatible with Metrocard while maintaining system security and accountability.

Identify availability of current and emerging electronic fare payment technologies; analyze their technological fit with bus and rail environments and other, non-transit applications such as banking and retail sales.

#### Task 4.0 – Analysis of Operating and Capital Revenue Availability

Identify the projected availability to the MTA region of funding for the purchase or lease of SRRPS revenue collection equipment. Include sources, types (operating, capital) and levels of funding.

Project the allocation of funds to the MTA and other potential transit participants in the SRRPS system.

Describe costs and benefits of traditional procurement of an SRRPS system, versus a turnkey SRRPS equipment and professional service contract in two configurations:

- a "stand-beside" SRRPS card reader unit; and
- an SRRPS read unit integrated with cash revenue processing.

#### Task 5.0 – Development of Passenger Revenue Management Strategies and Alternatives

Review existing administrative and contracting procedures and organization pertaining to MTA revenue collection and accounting.

Develop strategies and alternatives for overall collection of Metro bus and rail passenger revenues. Focus on identifying means to achieve economies through modifying status quo collection and accounting procedures and structure, while implementing the SRRPS. Analyze the advantages and disadvantages of the following scenarios:

- Scenario 1 - retaining the status quo equipment; this scenario shall include cost justifications for retaining the equipment for variable lengths of time, based on further discussion with MTA staff.
- Scenario 2 - upgrading current equipment or selected components.
- Scenario 3 - replacing existing revenue collection equipment; this option shall include a description and analysis of various procurement options, including:
  - MTA purchases new farebox equipment and manages and performs all aspects of revenue handling.
  - MTA purchases revenue collection equipment and outsources various aspects of revenue collection.
  - MTA leases revenue collection equipment and pays for revenue collection on a transactions basis.
  - MTA contracts for a "turn-key" system encompassing the provision of revenue collection equipment and all aspects of revenue handling.

For each scenario, develop strategies for implementing the SRRPS electronic fare payment system. Focus on the advantages and disadvantages of incorporating SRRPS with fareboxes or implementing SRRPS as a "stand-beside" component attachable to cash handling equipment. Include a cost/benefit analysis of all scenarios and their alternatives.

#### Task 6.0 – Development of Marketing Plan

Research and develop a marketing plan comprising the following:

- Research of target markets.
- Identification of customer acceptance issues.
- Development of educational materials and campaign(s).
- Status and benefits and costs of card-based customer loyalty programs and applicability to transit electronic fare collection.

#### Task 7.0 –Accommodating Future Technological Development

Develop a plan to accommodate future technological developments and migration to new technologies. Describe the implementation issues from the perspective of the MTA, other transit operators, and the banking and retail industries.

### **PART B. CLEARINGHOUSE FUNCTION**

#### Task 10.0 – Survey of current Metrocard operators, systems and contractual agreements

Review and describe current and pending Metrocard operators, their procedures for card and revenue management, marketing, and customer service.

Project the potential for future usage of electronic fare payment media in the MTA region, both in transit and non-transit applications.



Task 11.0 – Survey of other transit properties; legal and financial issues

Survey other U.S. and foreign jurisdictions with multiple transit properties operating jointly under unified electronic fare payment systems. Summarize the major characteristics of these jurisdictions (including number of operators, vehicles and card; equipment and card types; daily/monthly activity; transaction error rates; and lessons learned)

Evaluate the significant characteristics of these other systems in relation to the MTA region, including legislative powers & constraints, governing relations, and financial conditions.

Identify legal and regulatory issues associated with prepaid fare media in relation to the MTA. Include the following:

- Authority of non-banks to issue prepaid fare-debit cards
- Electronic funds transfer regulations (Federal Reserve Board Regulations E and Z)
- Abandoned property and escheatment laws
- Responsibility for lost or stolen cards, card or equipment malfunction, and issuer insolvency
- Privacy

Task 12.0 – Development of clearinghouse goals, objectives, and operating strategies

In coordination with the SRRPS Task Force, develop draft clearinghouse goals, objectives, and operating strategies that ensure the following:

- the protection of private, non-financial data
- the security of funds against unauthorized access
- the ability of participant operators to track funds movements
- the collection and distribution of funds in a secure and effective manner

Task 13.0 – Development of Clearinghouse Alternative Scenarios

In coordination with the SRRPS Task Force and based on the clearinghouse goals and objectives, describe the significant elements of various alternative scenarios of a closed system, including but not limited to the following:

- Scenario 1 - MTA or other participating operator performs some or all functions under contract with the other participating properties.
- Scenario 2 - Transit agency consortium or JPA formed by participating operators; performs some or all clearinghouse functions; other functions contracted to 3<sup>rd</sup>-party
- Scenario 3 - 3<sup>rd</sup>-party contracts the overall operation of clearinghouse function

Detail the policy, operating and cost impacts of each closed-system scenario.

In coordination with the SRRPS Task Force, develop operating and administrative procedures for the scenarios above to handle:

- initial pricing and related discounts and bonuses
- card sales and distribution
- lost, stolen and abandoned cards
- complaint resolution (in-service and post-ride complaints)
- card or equipment malfunction
- data transmission
- revenue collection and distribution

Task 14.0 – Development of an “Open System” Transition Plan

Develop a plan to accommodate the migration from a closed transit-only system, to a closed multipurpose system, to a fully “open” multiple-application system. Describe the legal, policy and implementation issues from the perspective of the MTA, other transit operators, banks and credit/debit card companies, and other goods & services providers.